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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,576	11/27/2001	Nam Q. Huyn	SURR.79	7296

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EXAMINER	
LY, CHEYNE D	

ART UNIT	PAPER NUMBER
1631	

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/994,576	HUYN, NAM Q.	
	Examiner	Art Unit	
	Cheyne D. Ly	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-49* is/are pending in the application.

4a) Of the above claim(s) *11,12,19, 23-38, and 41* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,13-18, 20-22, 39, 40, and 42-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-49* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/06/04*.
4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____.

DETAILED ACTION

1. Applicants' arguments filed April 25, 2005 have been fully considered but they are not deemed to be persuasive. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

2. Claims 1-10, 13-18, 20-22, 39, 40, and 42-49 are examined on the merits.

IDS

3. The IDS, filed September 16, 2003, directed to Application No. 09/944,576 has been removed from the instant file.

4. Documents AAC and AAD, filed December 06, 2004, have not been considered because said documents are not present in the filed.

CLAIM REJECTIONS - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 1-10, 13-18, 20-22, 39, 40, and 42-49 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory algorithm type subject matter.

7. This rejection is maintained with respect to claims 1-10, 13-18, 20-22, 39, 40, and 42-49, as recited in the previous office action mailed April 20, 2004.

RESPONSE TO ARGUMENTS

8. Applicant argues claims 1, 39, 40, and 42 have been amended to recite limitations which are sufficient to overcome the rejection. Further, Applicant points to the MPEP 2106 IV 2 b as support for said argument. Applicant's argument is not persuasive because the instant claims do not result in a physical transformation or physical alteration outside of the program storage device. It is noted that the limitation of "clinical endpoint" has been reasonably construed as a type of data analysis which does not result in controlling any physical transformation outside of a computing environment.

BASIS FOR REJECTION

9. Claims 1-10, 13-18, 20-22, 39, 40, and 42-49 are rejected because said claims are directed to a method and program storage device comprising steps for determining of n>p, k<p, reducing set of n measurements, and select values resulted from the above data manipulation step without any physical alteration step, which is considered to be non-statutory subject matter. "For example, a computer process that simply calculates a mathematical algorithm that models noise is nonstatutory. However, a claimed process for digitally filtering noise employing the mathematical algorithm is statutory." (MPEP § 2106 (IV)(B)(2) (b), part ii). Similar to the nonstatutory example above, the instant invention comprises algorithmic steps for identifying biological markers without any physical alteration resulted from the analysis.

10. It is acknowledged that claims 40 and 42 are directed to a program storage device comprising steps for analysis requiring the reducing and selecting steps. However, the steps of reducing and selecting do not cause any physical alteration outside of the program storage

device resulted from the analysis. Further, claims 40 and 42 recites "the program storage device...embodying a program of instructions executable by said processor..." wherein the instructions has been considered to be nonfunctional descriptive material. "When nonfunctional descriptive material is recorded on some computer-readable medium, it is not statutory since no requisite functionality is present to satisfy the practical application requirement. Merely claiming nonfunctional descriptive material stored in a computer-readable medium does not make it statutory" (MPEP § 2106 (IV)(B)(1).

CLAIM REJECTIONS - 35 U.S.C. § 112, SECOND PARAGRAPH

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claim 42 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

13. The instant rejection has been necessitated by claim amendments.

14. Claim 42 recites the limitation "the said at least two biological markers" in step (c). There is insufficient antecedent basis for this limitation in the claim.

CLAIM REJECTIONS - 35 U.S.C. § 112, FIRST PARAGRAPH

15. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

16. Claims 47-49 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

17. This rejection is maintained with respect to claims 47-49, as recited in the previous office action mailed April 20, 2004.

RESPONSE TO ARGUMENT

18. Applicant's argument via pointed to disclosure in pages 3 and 8 is not persuasive. For example, the pointed to disclosure of "hundreds or thousands of measurements" (page 3) does not support the limitation of "1000 or more", "5000 or more", or "10,000 or more" because pointed disclosure does not specify a lower limit, while the limitation of "1000 or more", "5000 or more", or "10,000 or more" has a specified lower limit. Further, the disclosure of "between five and ten thousand measurement" specifies a lower and upper limits, while the limitation of "1000 or more", "5000 or more", or "10,000 or more" does not have an upper limit. The disclosure in page 8, lines 18-21 does provide written basis support because the pointed to disclosure is different from the required limitations in regard to the upper or lower limits.

BASIS OF REJECTION

19. The limitations of "1000 or more", "5000 or more", or "10,000 or more" have not been found in the pointed to support (page 5, lines 5-7) of the instant specification as originally filed. It is acknowledged that the pointed to support discloses set of 5000 and 1000

biomarkers and 100 subjects which are completely different from "1000 or more", "5000 or more", or "10,000 or more" *n* biological measurements.

LACK OF ENABLEMENT UNDER 35 U.S.C. § 112, FIRST PARAGRAPH

20. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

21. Claims 1-10, 13-18, 20-22, 39, 40, and 42-49 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

22. This rejection is maintained with respect to claims 1-10, 13-18, 20-22, 39, 40, and 42-49, as recited in the previous office action mailed April 20, 2004.

23. Factors to be considered in determining whether a disclosure would require undue experimentation have been summarized in Ex parte Forman, 230 USPQ 546 (BPAI 1986) and reiterated by the Court of Appeals in In re Wands, 8 USPQ2d 1400 at 1404 (CAFC 1988). The factors to be considered in determining whether undue experimentation is required include: (1) the quantity of experimentation necessary, (2) the amount or direction presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or

unpredictability of the art, and (8) the breadth of the claims. The Board also stated that although the level of skill in molecular biology is high, the results of experiments in genetic engineering are unpredictable. While all of these factors are considered, a sufficient amount for a prima facie case is discussed below.

RESPONSE TO ARGUMENTS

24. Specific to item 1, Applicant argues that the "rejection asserts that the level of skill in molecular biology is high, but that the 'results of experiments in genetic engineering are unpredictable." Applicant's argument is not persuasive because the quoted assertion is not present in the Office Action, mailed April 20, 2004.

25. Specific to item 2, Applicant argues "[b]ecause the observations are already associated with a clinical endpoint prior to the identification, the claim is specific as to identifying biological markers predictive of that clinical endpoint." Applicant's argument is not persuasive because the identified biological markers do not predictably associate a specific clinical endpoint. For example, Applicant discloses biomarker measurements comprise soluble factor..., or amount of exercise (page 2, line 29 to page 3, line 4). The type of biomarkers of the present invention include those at much lower granularity blood cell population such as CD4 T cells (page 9, [007). It is noted that the above cited biomarkers are type of measurements taken for an overwhelming number of diseases. However, these types of measurements alone are not specific to any clinical endpoints, diseases. For example, a keyword search on the NCBI PubMed site with the criteria of "CD4 and disease" generates 867 hits. The first 20 hits (search results provided as a reference) cover such diseases as

AIDS, smallpox, diabetes, cancer, arthritis, SIV, and Experimental Autoimmune Encephalomyelitis. Without any specific disclosure as to the type of markers being used for predicting clinical endpoints, how does one of skill in the art use the claimed invention with any degree of predictability?

26. Specific to item 3, Applicant argues "the claimed invention, however, is not directed to 'measurements of biomarkers alone'...identifying biological markers from observations wherein each observation is associated with a clinical endpoint." Further, Applicant argues "it can not be said that the claims refer to "measurements of biomarkers alone." Applicant's argument is not persuasive because page 2 of the instant specification discloses "associated with each...observation is a large number of biological measurements...concentration of a soluble factor in the blood, blood cell population,..." Therefore, the disclosure has been reasonably construed as the measurements defined the observations. However, without specifically identifying the clinical endpoint, the type of observations disclosed by Applicant is the type of observations that are directed to an overwhelming number of clinical endpoints. Therefore, one of skill in the art would be able to practice the claimed invention with any degree of predictability?

27. Specific to item 4, Applicant argues "that no working examples are required to enable a patent application In re Borkowski, 422 F.2d 904, 908, 164 USPQ 642(CCPA1 970), which has been noted. The specification need not contain an example if the invention is otherwise disclosed in such manner that one skilled in the art will be able to practice it without an

undue amount of experimentation. In re Borkowski, 422 F.2d 904, 908, 164 USPQ 642, 645 (CCPA 1970). Which is not the case in the instant Application because the instant specification does not disclosed in such manner that one skilled in the art will be able to practice it without an undue amount of experimentation as discussed above.

BASIS FOR REJECTION

28. The instant specification discloses an invention relates generally analysis of biological data for predicting clinical endpoints such as disease conditions, response to drug therapy, or disease progression (page 1, [0002]). The claimed invention is directed to a method and program storage device for identifying biological markers associated with a clinical endpoint. However, said specification does not disclose any specific clinical endpoints which have been identified with the claimed method as directed to any specific set of biomarkers.

29. It is noted that each disease condition has its own specific pathology and mechanism of action. In regard to drug therapy, each drug is specific to the disease being treated and the mechanism of action of said drug. What specific clinical endpoints are being identified with the claimed invention? Without any specificity as to the type of clinical endpoints or drugs, one of skill in the art would not know how to predictably practice the claimed invention without undue experimentation.

30. Further, Applicant discloses biomarker measurements comprise soluble factor..., or amount of exercise (page 2, line 29 to page 3, line 4). Further, the type of biomarkers of the present invention include those at much lower granularity blood cell population such as CD4

T cells (page 9, [007). It is noted that the above cited biomarkers are type of measurements taken for an overwhelming number of diseases. However, these types of measurements alone are not specific to any clinical endpoints, diseases. For example, a keyword search on the NCBI PubMed site with the criteria of "CD4 and disease" generates 867 hits. The first 20 hits (search results provided as a reference) cover such diseases as AIDS, smallpox, diabetes, cancer, arthritis, SIV, and Experimental Autoimmune Encephalomyelitis. Without any specific disclosure as to the type of markers being used for predicting clinical endpoints, how does one of skill in the art use the claimed invention with any degree of predictability?

31. Therefore, one of skill in the would not know how to predictably practice the claimed invention without undue experimentation due to the lack of disclosure of the specific type of biomarkers being used by the claimed invention to predict a clinical endpoint.

CONCLUSION

32. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

33. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

34. This application contains claims 11, 12, 19, 23-38, and 41 drawn to an invention nonelected, filed May 13, 2003. A complete reply to the final rejection must include cancelation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

35. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547. The USPTO's official fax number is (571) 273-8300.

36. Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

37. For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

38. Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. Dune Ly, whose telephone number is (571) 272-0716. The examiner can normally be reached on Monday-Friday from 8 A.M. to 4 P.M.

39. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ardin Marschel, Ph.D., can be reached on (571) 272-0718.

C. Dune Ly

6/27/05

Ardin H. Marschel 6/27/05

ARDIN H. MARSCHEL
SUPERVISORY PATENT EXAMINER